IMAGE FORMING DEVICE

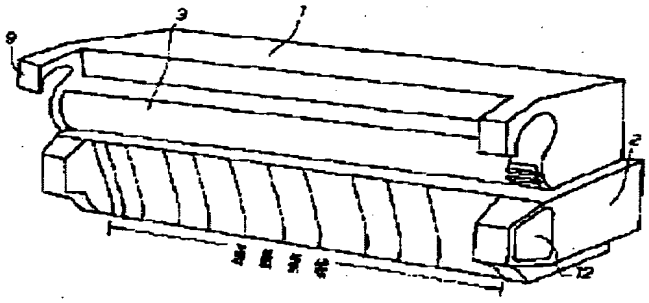
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Applicant:	SANYO ELECTRIC CO
Classification:	
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Application number:	JP19940273524 19941108
Priority number(s):	JP19940273524 19941108

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Abstract of **JP8137366**

PURPOSE: To provide an image forming device provided with a knob arranged in each unit and hardly stained with unfixed toner, in a constitution that a process unit for forming an image is divided into first and second units and each of them is attached detachably in an image forming device main body.

CONSTITUTION: The process unit for forming the image is divided into a drum unit 1 provided with a photoreceptor drum 3, etc., and a developing unit 2 provided with a developing roller 10, etc., and the respective units 1 and 2 are provided detachably in the image forming device main body. Then, an image forming part is provided on the leading side in the removing directions of the respective units 1 and 2 and the knobs 9 and 12 are provided in the casing parts of the respective units 1 and 2 on both side positions outside a paper passing region formed on the leading side.



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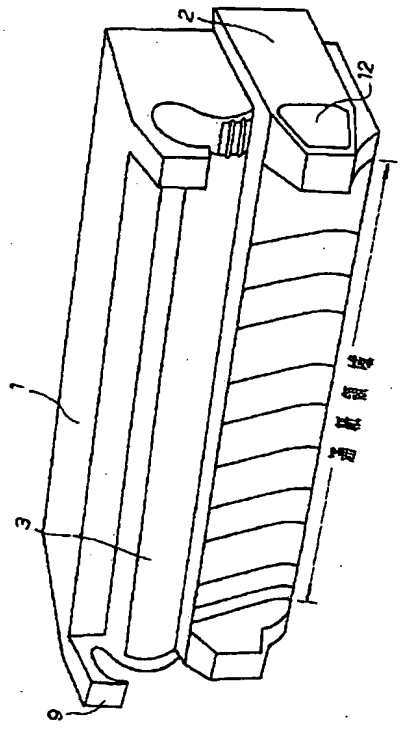
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(54)【発明の名称】　画像形成装置

(57)【要約】
【目的】　画像形成のためのプロセスユニットが、第１のユニットと第２のユニットとに分割され、各々のユニットが画像形成装置本体に対して着脱自在に設けられる構成において、各ユニットに把手を設けるとともにこの把手が未定着トナーによって汚染され難い構造の画像形成装置を提供することを目的とする。
【構成】　画像形成のためのプロセスユニットが、感光体ドラム３等を備えるドラムユニット１と、現像ローラ１０等を備える現像ユニット２とに分割され、各々のユニット１，２が画像形成装置本体に対して着脱自在に設けられるとともに、各々のユニット１，２の取り外し方向の先頭側に画像形成部が設けられ、前記先頭側に形成される通紙領域の外側の両サイド位置の前記各ユニット１，２の筐体部に把手９，１２を設けている。



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【特許請求の範囲】

【請求項１】　画像形成のためのプロセスユニットが、少なくとも像担持体を備える第１のユニットと、少なくとも現像ローラを備える第２のユニットとに分割され、各々のユニットが画像形成装置本体に対して着脱自在に設けられるとともに、各々のユニットの取り外し方向の先頭側に画像形成部が設けられ、前記先頭側に形成される通紙領域の外側の両サイド位置の前記各ユニットの筐体部に把手をそれぞれ設けていることを特徴とする画像形成装置。

【請求項２】　前記把手の先端部が、前記先頭側に形成される通紙領域を越える位置まで延設されていることを特徴とする請求項１記載の画像形成装置。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、プリンタ、ＦＡＸ、或いは複写機等の電子写真方式により画像を形成する画像形成装置に関する。

【０００２】

【従来の技術】電子写真方式により画像を形成する画像形成装置では、近年、感光体、クリーニング装置、及び帯電装置、及び現像ローラ等を具備したプロセスユニットを、画像形成装置本体から着脱可能とすることによって、かかるプロセスユニット単位での交換や修理などが行えるようにしている。更に、上記プロセスユニットの交換が容易に行えるように、当該ユニットに把手を設けている。

【０００３】従来、プロセスユニットの把手として、プロセスカートリッジの外側に、可撓性を有するシートを介して把手を設けることにより、蓋を閉めたときなどに上記把手が塑性変形して蓋に干渉しないようにしたものが知られている（特開平２－２８４１６４号公報：Ｇ０３Ｇ　１５／００参照）。

【０００４】また、プロセスカートリッジに着脱可能な把手を備えるとともに、この把手に感光体ドラムを覆うカバー部を形成し、感光体ドラムを保護しながらカートリッジの着脱が行えるようにしたものが知られている（特開昭６３－２４７７６４号公報：Ｇ０３Ｇ　１５／００参照）。

【０００５】上記従来の構造は、プロセスユニット単位で交換を行う構成において当該プロセスユニットに把手を設けた構造であり、両者ともに、プロセスユニットの取り外し方向の先頭側、即ち当該従来例においてはトナーボックスの前記画像形成部から離れた位置に把手を設けている。

【０００６】

【発明が解決しようとする課題】ところで、プロセスユニット単位での交換は、トナーが全て消費されたときに行われるが、その時点では未だ感光体等の寿命が十分にあるため、不経済であるといった欠点がある。そこで、

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プロセスユニットを、例えば、感光体、クリーニング装置、及び帯電装置などの比較的寿命が長い或いは高価な部品を含むドラムユニットと、トナーや現像ローラ等の消耗品或いは比較的寿命の短い部品を含む現像ユニットとに分割し、各々を画像形成装置本体から着脱自在に設けることが考えられる。更に、この分割タイプにおいて、各々のユニットの取り外し方向の先頭側に画像形成部（ドラムユニットにおける感光体ドラムや現像ユニットにおける現像ローラ）を設けることが考えられる。

【０００７】しかしながら、上述した従来構造の把手を、上記分割構成とされた各々のユニットの取り外し方向の先頭側の位置に設けるとすると、当該位置には、画像形成部が設けられていることから、当該把手に未定着トナーが付着する。特に、画像形成装置内で記録紙が搬送ミス等により紙づまりを起こした場合の作業に際して未定着トナーが把手に付着し易い。このため、プロセスカートリッジ着脱時等に作業者の手を汚すという問題がある。

【０００８】更に、上記分割構成とされている場合で各々のユニットを別々に着脱させる場合には、この着脱の際に把手自身が障害になる等の問題がある。

【０００９】また、把手に感光体ドラムを覆うカバーを設ける従来技術は、上記分割構成とする場合には適用することが困難であるとともに、上記カバーのみを把手から単独で開閉させることができないために、把手を持った状態でカバーを開閉して感光体ドラムの点検を行うことができないといった欠点がある。

【００１０】本発明は、上記の事情に鑑み、画像形成のためのプロセスユニットが、第１のユニットと第２のユニットとに分割され、各々のユニットが画像形成装置本体に対して着脱自在に設けられる構成において、各ユニットに把手を設けるとともにこの把手が未定着トナーによって汚染され難い構造の画像形成装置を提供することを目的とする。

【００１１】

【課題を解決するための手段】本発明の画像形成装置は、画像形成のためのプロセスユニットが、少なくとも感光体を備える第１のユニットと、少なくとも現像ローラを備える第２のユニットとに分割され、各々のユニットが画像形成装置本体に対して着脱自在に設けられるとともに、各々のユニットの取り外し方向の先頭側に画像形成部が設けられ、前記先頭側に形成される通紙領域の外側の両サイド位置の前記各ユニットの筐体部に把手をそれぞれ設けていることを特徴とする。

【００１２】また、上記の構成において、前記把手の先端部が、前記先頭側に形成される通紙領域を越える位置まで延設されていてもよい。

【００１３】

【作用】上記の構成によれば、各々のユニットの取り外し方向の先頭側に形成される通紙領域の外側の両サイド

位置の前記各ユニットの筐体部に把手をそれぞれ設けているので、記録紙が通紙経路内で詰まり、記録紙上の未定着トナーが通紙経路内で散乱しても、前記通紙領域の外側に外れた位置にある前記把手には未定着トナーが付着することがない。これにより、オペレーターは手を汚すことなく、簡単に各ユニットの交換やメンテナンス作業を行うことが可能となる。

【００１４】また、前記把手の先端部が、前記先頭側に形成される通紙領域を越える位置まで延設した構成であれば、一層容易に前記分割された各ユニットのそれぞれを個別に画像形成装置本体に対して着脱することができる。

【００１５】

【実施例】以下、本発明をその実施例を示す図に基づいて説明する。

【００１６】図１は、本発明の画像形成装置におけるプロセスユニット２０を示す概略の斜視図である。このプロセスユニット２０は、長期使用ユニットであるドラムユニット１と、短期使用ユニットである現像ユニット２とに分割されて成り、各々が画像形成装置本体（図示せず）に対して着脱自在に設けられる。具体的には、画像形成装置本体内には図示しないガイドが形成されており、前記の現像ユニット２を略水平方向（図中のＢ方向）にスライドさせることにより、これを画像形成装置本体内にセットすることができ、このセットされた状態で現像ユニット２が位置固定されるようになっている。また、ドラムユニット１も同様、図示しないガイドによって略水平方向にスライドさせることにより、これを前記現像ユニット２の上側位置にセットすることができる。このセットされた状態では、ドラムユニット１は図示しない係合突起部によって前記現像ユニット２により移動が規制され、位置決めがなされるようになっている。

【００１７】ドラムユニット１は、略偏平な筐体内の図１中Ａ方向（ユニットの取り外し方向）の先頭側に、像担持体である感光体ドラム３を、図２に示すように、図中矢印方向に回転自在に備えている。感光体ドラム３の下方側及び前方側（先頭側）の筐体部分には、当該感光体ドラム３の幅に対応した開口が形成されており、この開口部分において感光体ドラム３の周面が露出されるようになっている。また、前記筐体内であって前記感光体ドラム３の周囲には、この感光体ドラム３の周面（感光面）を一様に帯電させるスコロトロン帯電装置５、及び感光体ドラム３の周面上の未転写トナーを掻き落すウレタンブレードからなるクリーニング装置４が備えられる。そして、このクリーニング装置４にて掻き落とされた未転写トナーは、廃トナー収納装置６により貯留されるようになっている。

【００１８】現像ユニット２は、略偏平な筐体内にトナー収容部２ａを形成して成るとともに、図１中手前側

（先頭側）の上方位置に、現像ローラである弾性体ローラ１０を図中矢印方向に回転自在に備えている。弾性体ローラ１０の上方側の筐体部分には、当該弾性体ローラ１０の幅に対応した開口が形成されており、この開口部分において弾性体ローラ１０の周面が露出されるようになっている。

【００１９】上記現像ユニット２上にドラムユニット１を載置した状態では、前記弾性体ローラ１０の周面に前記感光体ドラム３の周面が当接され、接触現像が行われるようになっている。即ち、弾性体ローラ１０の周面上の薄層化させた非磁性トナーが、感光体ドラム３の周面上に押圧接触して一成分現像方式による現像が行われる。

【００２０】感光体ドラム３の前方には、発砲ウレタンゴムからなる半導電性ローラにて構成された転写装置１１が配置されている。この転写装置１１は、図中の矢印Ｃで示す方向（ユニット取り外し方向と交差する方向）に用紙を搬送する図示しない用紙搬送手段に一体的に設けられている。転写装置１１は、上記の非磁性トナーと反対極性のバイアス電圧が印加され、図２中の矢印Ｃ方向に搬送される記録用紙に、前記感光体ドラム３の周面上に形成されたトナー像を転写させる。

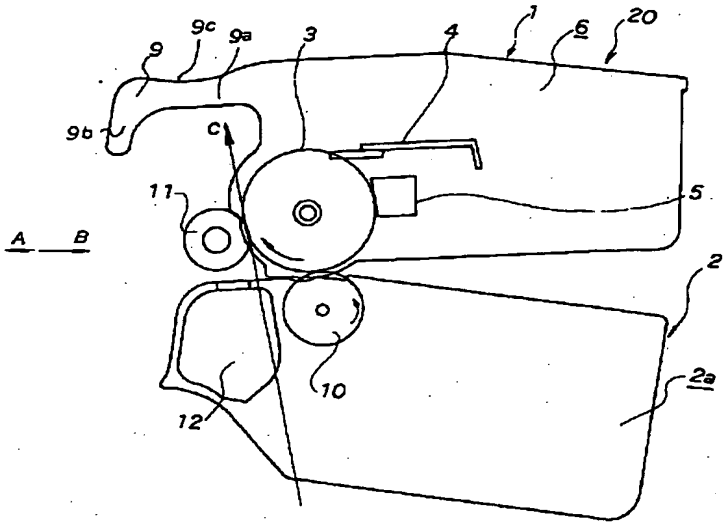
【００２１】記録用紙の搬送経路（通紙領域）に干渉しない両サイド位置の前記ドラムユニット１の筐体部には、第１の把手９，９が形成されている。この第１の把手９，９は、ユニット取り外し方向の先頭側に形成される前記通紙領域を越える位置まで延設されており、上記取り外し方向に平行な延設部９ａと、この延設部９ａの先端側に形成された上記取り外し方向に垂直な屈曲部９ｂとから成る。また、延設部９ａの上面側には、微小凹凸からなる滑り止め部９ｃが形成されている。

【００２２】また、同じく、記録用紙の搬送経路（通紙領域）に干渉しない両サイド位置の前記現像ユニット２の筐体部には、第２の把手１２，１２が形成されている。この第２の把手１２，１２は、前記筐体部の側面に形成された凹部１２ａから成り、ユニット取り外し方向の先頭側に形成される前記通紙領域を越える位置まで延設されている。

【００２３】上記のごとく、ドラムユニット１には第１の把手９，９が形成され、現像ユニット２には第２の把手１２，１２が形成されていることにより、これらユニット１，２を画像形成装置内に簡単にセットできるとともに、その取り外しも容易に行えることになる。

【００２４】そして、各々のユニット１，２の取り外し方向の先頭側に形成される通紙領域の外側の両サイド位置の前記各ユニット１，２の筐体部に把手９，１２を設けているので、記録紙が通紙経路内で詰まり、記録紙上の未定着トナーが通紙経路内で散乱しても、前記通紙領域の外側に外れた位置にある前記把手９，１２には未定着トナーが付着することがない。これにより、オペレー

【図２】



PATENT ABSTRACTS OF JAPAN

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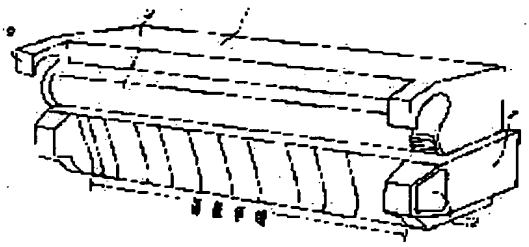
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(21)Application number : 06-273524
(22)Date of filing : 08.11.1994

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(72)Inventor : MAKINO MASAMI
FUJIWARA SUSUMU

(54) IMAGE FORMING DEVICE

(57)Abstract:
PURPOSE: To provide an image forming device provided with a knob arranged in each unit and hardly stained with unfixed toner, in a constitution that a process unit for forming an image is divided into first and second units and each of them is attached detachably in an image forming device main body.
CONSTITUTION: The process unit for forming the image is divided into a drum unit 1 provided with a photoreceptor drum 3, etc., and a developing unit 2 provided with a developing roller 10, etc., and the respective units 1 and 2 are provided detachably in the image forming device main body. Then, an image forming part is provided on the leading side in the removing directions of the respective units 1 and 2 and the knobs 9 and 12 are provided in the casing parts of the respective units 1 and 2 on both side positions outside a paper passing region formed on the leading side.



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[Date of requesting appeal against examiner's decision of rejection]
[Date of extinction of right]

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CLAIMS

[Claim(s)]
[Claim 1] The 1st unit which the process unit for image formation equips with image support at least, While being divided into the 2nd unit equipped with a developing roller at least and preparing each unit free [attachment and detachment] to the body of image formation equipment Image formation equipment characterized by having prepared the image formation section in the head side of the removal direction of each unit, and having prepared the handle in the case section of each of said unit of both the side location of the outside of the **** field formed in said head side, respectively.
[Claim 2] Image formation equipment according to claim 1 characterized by being installed to the location where the point of said handle crosses the **** field formed in said head side.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the image formation equipment which forms an image with electrophotography methods, such as a printer, FAX, or a copying machine.
[0002]
[Description of the Prior Art] It enables it to perform exchange, repair, etc. in this process-unit unit with the image formation equipment which forms an image with an electrophotography method by making removable the process unit possessing a photo conductor, cleaning equipment, electrification equipment, a developing roller, etc. from the body of image formation equipment in recent years. Furthermore, the handle is provided in the unit concerned so that the above-mentioned process unit can be exchanged easily.
[0003] By preparing a handle in the outside of a process cartridge as a handle of a process unit conventionally through the sheet which has flexibility, when a lid is shut, the thing the above-mentioned handle deforms plastically and it was made not to interfere in a lid is known (JP,2-284164,A: G03G 15/00 reference).
[0004] Moreover, while equipping a process cartridge with a removable handle, the wrap covering section is formed in this handle for a photo conductor drum, and the thing which enabled it to detach and attach a cartridge is known, protecting a photo conductor drum (JP,63-247764,A: G03G 15/00 reference).
[0005] The above-mentioned conventional structure is the structure which prepared the handle in the process unit concerned in the configuration which exchanges per process unit, and has prepared the handle in the location where both separated from said image formation section of a toner box in the head side of the removal direction of a process unit, i.e., the conventional example concerned.
[0006]
[Problem(s) to be Solved by the Invention] By the way, although exchange in a process-unit unit is performed when all toners are consumed, for a certain reason, at the time, there are still faults [life / of a photo conductor etc.] of enough of being uneconomical. Then, it divides into the drum unit which contains expensive components with a comparatively long or life, such as a photo conductor, cleaning equipment, and electrification equipment, for a process unit, and the development unit containing an article of consumption or components with a comparatively short life, such as a toner and a developing roller, and it is possible to prepare each free [attachment and detachment] from the body of image formation equipment. Furthermore, in this division type, it is possible to prepare the image formation section (the photo conductor drum in a drum unit, and developing roller in a development unit) in the head side of the removal direction of each unit.
[0007] However, since the image formation section is prepared in the location concerned supposing it prepares the handle of structure in the location by the side of the head of the removal direction of each unit considered as the above-mentioned division configuration conventionally which was mentioned above, a non-established toner adheres to the handle concerned. On the occasion of an activity when the recording paper causes a paper jam by conveyance mistake etc., a non-established toner tends [especially] to adhere to a handle within image formation equipment. For this reason, there is a problem of soiling an operator's hand, at the time of process cartridge attachment and detachment etc.
[0008] Furthermore, in making each unit detach and attach separately by the case where it considers as the above-mentioned division configuration, there are problems, like the handle itself becomes a failure in the case of this attachment and detachment.
[0009] Moreover, since it cannot make only the above-mentioned covering open and close independently from a handle while it is difficult to apply, when the conventional technique of preparing wrap covering

considers a photo conductor drum as the above-mentioned division configuration at a handle, there is a fault that covering cannot be opened and closed where it has a handle, and a photo conductor drum cannot be checked.

[0010] In view of the above-mentioned situation, the process unit for image formation is divided into the 1st unit and 2nd unit, and this invention aims at offering the image formation equipment of the structure where this handle is hard to be polluted with a non-established toner while each unit prepares a handle in each unit in the configuration prepared free [attachment and detachment] to the body of image formation equipment.

[0011]

[Means for Solving the Problem] The 1st unit which, as for the image formation equipment of this invention, the process unit for image formation equips with a photo conductor at least, While being divided into the 2nd unit equipped with a developing roller at least and preparing each unit free [attachment and detachment] to the body of image formation equipment It is characterized by having prepared the image formation section in the head side of the removal direction of each unit, and having prepared the handle in the case section of each of said unit of both the side location of the outside of the **** field formed in said head side, respectively.

[0012] Moreover, in the above-mentioned configuration, the point of said handle may be installed to the location exceeding the **** field formed in said head side.

[0013]

[Function] Since the handle has been prepared in the case section of each of said unit of both the side location of the outside of the **** field formed in the head side of the removal direction of each unit, respectively according to the above-mentioned configuration, even if it gets the recording paper blocked within a **** path and the non-established toners in the record paper are scattered about within a **** path, a non-established toner does not adhere to said handle in the location from which it separated on the outside of said **** field. Thereby, an operator becomes possible [doing exchange and a maintenance of each unit simply], without soiling a hand.

[0014] Moreover, if the point of said handle is the configuration installed to the location exceeding the **** field formed in said head side, it can detach [point] each of each of said divided unit still more easily and attach to the body of image formation equipment according to an individual.

[0015]

[Example] Hereafter, this invention is explained based on drawing showing the example.

[0016] Drawing 1 is the perspective view of an outline showing the process unit 20 in the image formation equipment of this invention. This process unit 20 is divided into the drum unit 1 which is a long-term use unit, and the development unit 2 which is a short-term use unit, and changes, and each is prepared free [attachment and detachment] to the body of image formation equipment (not shown). In the body of image formation equipment, the guide which is not illustrated is specifically formed, by making the aforementioned development unit 2 slide to an abbreviation horizontal direction (the direction of B in drawing), this can be set in the body of image formation equipment, and location immobilization of the development unit 2 is carried out in this condition of having been set. Moreover, this can be set to the top location of said development unit 2 by making the drum unit 1 slide to an abbreviation horizontal direction with the guide which is not illustrated similarly. In this condition of having been set, by the engagement height which the drum unit 1 does not illustrate, migration is regulated by said development unit 2 and positioning is made.

[0017] The drum unit 1 equips the head side of the direction (the removal direction of a unit) of A in abbreviation drawing 1 R> 1 in a flat case with the photo conductor drum 3 which is image support free [rotation in the drawing Nakaya mark direction], as shown in drawing 2 . Opening corresponding to the width of face of the photo conductor drum 3 concerned is formed in the case part by the side of the lower part of the photo conductor drum 3, and the front (head side), and the peripheral surface of the photo conductor drum 3 is exposed to it in this opening part. Moreover, it is in said case and the perimeter of said photo conductor drum 3 is equipped with the scorotron electrification equipment 5 which electrifies uniformly the peripheral surface (sensitization side) of this photo conductor drum 3, and the cleaning equipment 4 which consists of an urethane blade which fails to scratch the non-imprinted toner on the peripheral surface of the photo conductor drum 3. And the non-imprinted toner which failed to be scratched with this cleaning equipment 4 is stored by waste toner receipt equipment 6.

[0018] the development unit 2 -- abbreviation -- while forming toner hold section 2a and changing in a flat case, the upper part location by the side of before the drawing 1 metacarpus (head side) is equipped with the elastic body roller 10 which is a developing roller free [rotation in the drawing Nakaya mark direction].

Opening corresponding to the width of face of the elastic body roller 10 concerned is formed in the case part by the side of the upper part of the elastic body roller 10, and the peripheral surface of the elastic body roller 10 is exposed to it in this opening part.

[0019] Where the drum unit 1 is laid on the above-mentioned development unit 2, the peripheral surface of said photo conductor drum 3 is contacted by the peripheral surface of said elastic body roller 10, and contact development is performed. That is, the nonmagnetic toner on the peripheral surface of the elastic body roller 10 which carried out lamination carries out press contact on the peripheral surface of the photo conductor drum 3, and development by the 1 component development method is performed.

[0020] Ahead [of the photo conductor drum 3], the imprint equipment 11 which consisted of semi-conductive rollers which consist of firing polyurethane rubber is arranged. This imprint equipment 11 is formed in a form conveyance means which is not illustrated to convey a form in the direction (the unit removal direction and crossing direction) shown by the arrow head C in drawing, in one. The above-mentioned nonmagnetic toner and the bias voltage of antipole nature are impressed, and imprint equipment 11 makes the record form conveyed in the direction of arrow-head C in drawing 2 imprint the toner image formed on the peripheral surface of said photo conductor drum 3.

[0021] The 1st handle 9 and 9 is formed in the case section of said drum unit 1 of both the side location that does not interfere in the conveyance path (copy paper field) of a record form. This 1st handle 9 and 9 is installed to the location exceeding said **** field formed in the head side of the unit removal direction, and consists of installation section 9a parallel to the above-mentioned removal direction, and flection 9b perpendicular to the above-mentioned removal direction formed in the tip side of this installation section 9a. Moreover, skid section 9c which consists of minute irregularity is formed in the top-face side of installation section 9a.

[0022] Moreover, similarly the 2nd handle 12 and 12 is formed in the case section of said development unit 2 of both the side location that does not interfere in the conveyance path (copy paper field) of a record form. This 2nd handle 12 and 12 consists of crevice 12a formed in the side face of said case section, and is installed to the location exceeding said **** field formed in the head side of the unit removal direction.

[0023] While being able to set these units 1 and 2 easily in image formation equipment by forming the 1st handle 9 and 9 in the drum unit 1, and forming the 2nd handle 12 and 12 in the development unit 2 like the above, the removal can also be performed easily.

[0024] And since handles 9 and 12 are formed in the case section of each of said units 1 and 2 of both the side location of the outside of the **** field formed in the head side of the removal direction of each units 1 and 2 Even if it gets the recording paper blocked within a **** path and the non-established toners in the record paper are scattered about within a **** path, a non-established toner does not adhere to said handles 9 and 12 in the location from which it separated on the outside of said **** field. Thereby, an operator becomes possible [doing exchange and a maintenance of each units 1 and 2 simply], without soiling a hand.

[0025] Furthermore, it can detach [point / since the point of handles 9 and 12 is installing to the location exceeding the **** field formed in said head side] each of each divided units 1 and 2 in this example, and attach easily to the body of image formation equipment according to an individual.

[0026] In addition, what is necessary is just to pull out, after rotating a form conveyance means which is not illustrated to hold said imprint equipment 11 in one and opening the head side of both the units 1 and 2 wide from the condition shown in drawing 2 , when taking out the drum unit 1 or the development unit 2 from the inside of the body of image formation equipment. Moreover, it is possible it not only can to pull out the drum unit 1 or the development unit 2 according to an individual, but to pull it out to coincidence.

[0027] Moreover, in this example, since handles 9 and 12 are not what fixed the bundle hand part material which was really fabricated by the case of a unit, respectively and was formed separately according to **** etc., a production process does not complicate them.

[0028] Moreover, neither cleaning equipment 4 nor electrification equipment 5 may be limited to what was explained by this example, and may be brush-like cleaning equipment by which bias impression was carried out as cleaning equipment, cleaning equipment with a conductive elastic roller is sufficient as it, and roller electrification equipment or brush electrification equipment is sufficient as it as electrification equipment 5. As imprint equipment 11, not only a conductive roller but scorotron imprint equipment may be used, and the development approach is replaced with a nonmagnetic 1 component development method, and is still better also as magnetic toner development equipment or a 2 component development method.

[0029]

[Effect of the Invention] It becomes possible to do exchange and a maintenance of each unit simply, without

according to this invention, a non-established toner's not adhering to said handle in the location from which it separated on the outside of said **** field, and an operator soiling a hand, even if it gets the recording paper blocked within a **** path and the non-established toners in the record paper are scattered about within a **** path, as explained above. Moreover, it can detach [point / if the point of said handle is the configuration installed to the location exceeding the **** field formed in said head side] each of each divided unit and attach easily to the body of image formation equipment according to an individual.

[Translation done.]

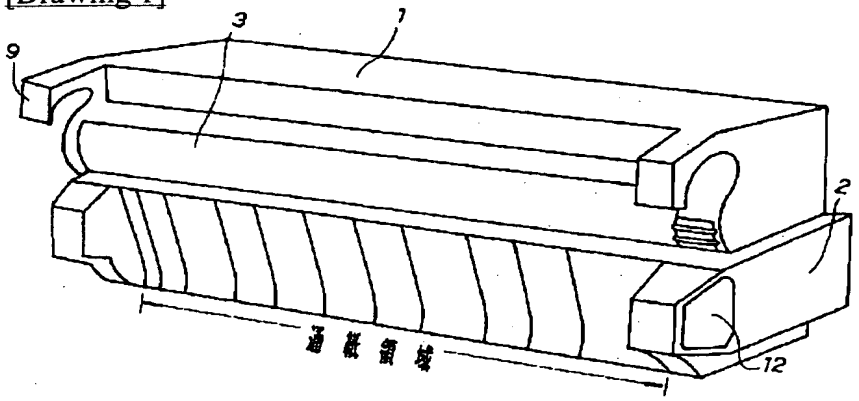
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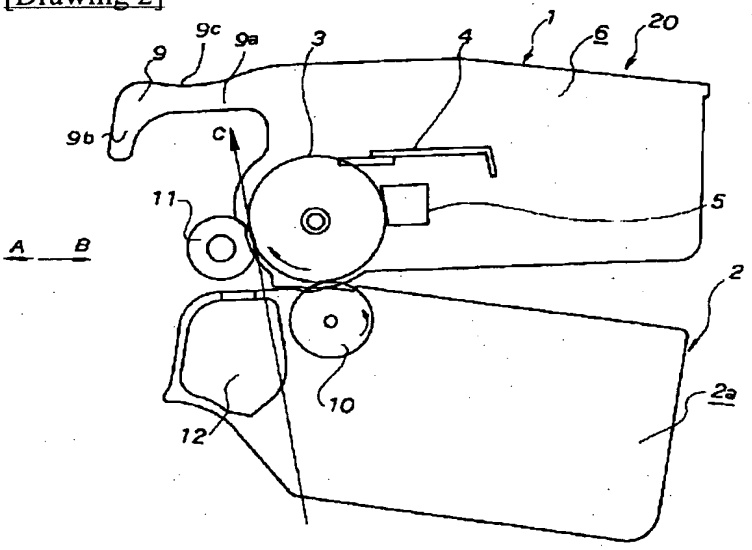
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DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]